SEPTEMBER, MDCCCLX.

THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY,

AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

No. CCXX.

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

Price ONE SHILLING.

Habits of Macroglossa stellatarum.—I was much interested, the other day, in watching a female of the above species depositing her eggs; the locality she selected was a high bank on the road-side. My attention was first directed to her movements by a loud humming noise. She flew in and out of the herbage in a very busy manner, occasionally alighting for a moment, and then off again. I immediately suspected that she was depositing her eggs, and upon careful examination found that such was the fact: by following her about I soon succeeded in obtaining a small quantity. I am unfortunately no botanist, and cannot therefore give the scientific name of the plant she selected, but it will probably be known to most of your readers as "robin-run-the-hedge." I was not aware that the larva fed on this plant. Nothing could be more interesting than to watch the unerring instinct with which she picked out the right plant from the quantity of herbage covering the bank. It was very difficult to follow her motions: the whole operation was like a flash of lightning.—*Joseph Greene; Ringwood, Hants.*

Abundant occurrence of Sesia Muscæformis? near Torquay.—Scarcely any of my readers are old enough as entomologists to recollect that twenty-eight years ago I published, in the 'Entomological Magazine,' a little Monograph of the Species of Sesia found in England, and that I added to the usual list two species, with descriptions from single specimens. One of them appeared under the name Muscæformis, from a single specimen taken a few miles from Torquay, and at that time in the hands of the late James Francis Stephens. This insect has been taken in abundance during the present summer on the Devonshire coast, settling on the blossoms of the wild thyme, at a distance of about fifteen miles from Torquay. With regard to the name some little difference of opinion appears to prevail: the names of Tenthrediformis, Hylæiformis, Sapygiformis (J. J. Reading), Philanthiformis (G. King), and Braconiformis (G. Wailes), have been very confidently applied. I am not certain of the authorities for these names or of their dates: my name of Muscæformis dates from Esper, 1777, but it is also described in a work quoted by Treitschke and others under the name of 'Vieweg. Tab. Verz.,' with which I am unacquainted; the description is referred to as at vol. i. p. 18, species 9. Owing probably to the somewhat unskilful mode in which these insects have been captured there are none in sufficiently good condition for me to draw up a very precise description at present; I may, however, remark that the number of pale rings on the abdomen is three only, instead of five: the margin of every abdominal segment is glittering and appears pale, but I am convinced would not be so in perfect specimens: the indistinct whitish annulus on the antennæ of the female distinguishes this from all cognate species.—*E. Newman.*

Food-plant of the Larva of Eupithecia rufifasciata.—In addition to to the food-plants mentioned by the Revs. J. Hellins and Crewe of the larva of this species I may name the common broom. I do not, however, think that this is its favourite pabulum. Being at the time ignorant of the species, I searched diligently, but could only find about a dozen, all of which were on a single plant. I discovered two or three pupæ spun up in the leaves.—*J. Greene; Ringwood, Hants, August* 10, 1860.

Dicranura bicuspis.—On the 20th of June I went out for a day's entomologizing; when I had fairly gained the hunting-ground where I intended to commence operations the rain began to come down in torrents, so of course I concluded that to make the best of my way back was my wisest course, and commenced my retreat accordingly; but in turning to shelter under some alders I was both surprised and delighted to see a beautiful specimen of a male Dicranura bicuspis sitting on the

BRITISH MUSEUM

trunk of one of the alders, immediately above its pupa-case; I immediately proceeded to box it, considering myself as lucky as I had a few moments before considered myself unlucky. This is the second specimen of D. bicuspis which has fallen to my lot, having taken a pupa from an alder in 1858, but, unfortunately, being from home when it emerged, it had so beat itself about that I had some doubts as to its being a *bona fide* D. bicuspis.—*T. Meldrum; Millgate, Ripon.—From the 'Intelligencer.'*

Capture of Acronycta Alni at Sugar.—On the 23rd of June I had the good fortune to take a fine specimen of Acronycta Alni at sugar, in Haw Park, near Walton Hall.—*Charles Roberts; Elm Street, Wakefield, July* 3, 1860.—*Id.*

Larvæ of Caradrina cubicularis.—At the end of May last, upon removing some logs of wood which had supported a hay-stack, I observed, in the crevices, the signs of a cocoon. Upon splitting one of the logs a number of larvæ fell out. They were dirty white, with a few black dots, and about an inch in length. I entertained little doubt that they belonged to the genus Caradrina; but as I had never seen any of the larvæ of that genus I took one of the logs into my insect-room, and in due time my conjecture proved correct, the larva producing Caradrina cubicularis. They go very deep into the crevices, and spin a toughish cocoon mixed with abraded wood. The above would not be worth mentioning were it not that so little is known of the habits of this and other allied genera.—*J. Greene; Ringwood, Hants, August* 10, 1860.

Description of the Larva of Tæniocampa Populeti.—This larva seems to be little known among entomologists generally, and perhaps an accurate description, taken from living larvæ, may be acceptable to the readers of the 'Zoologist.' Ground-colour pale green, back whitish. Dorsal lines three, white, the central one broad and distinct, the two others narrow and indistinct. Head buff, when young blackish. Segmental divisions yellowish. Spiracles enclosed between two narrow waved whitish lines. Body sparingly strewed with whitish hairs. Feeds between united leaves of various species of poplar, preferring that known as the black Italian. Full-fed throughout the month of June. In habits and appearance this larva closely resembles that of T. subtusa, and when young may easily be mistaken for it. The pupa resembles that of T. gothica.—*H. Harpur Crewe; Horndean, Hants, July* 18, 1860.

Occurrence of Agrotera nemoralis in Sussex.—I took a specimen of this species last month, on the wing, at Woodsdale, near Battle.—*John Porter, jun.; Lewes, June* 16, 1860.—*From the 'Intelligencer.'*

[Has any entomologist acquainted with Agrotera nemoralis seen and named this specimen? The species is of great rarity.—*Edward Newman.*]

Exæretia Allisella Bred.—Seeing a notice in the 'Entomologist's Intelligencer' of yesterday, by Mr. Stainton, that he had bred E. Allisella from larvæ sent him by Mr. Gregson on the 28th of May last, in which Mr. Stainton remarks, that from the tendency of the perfect insect to go greasy in collections the economy of the larvæ as a stem-borer might have been deduced, I send the following observations. Mr. Stainton is perfectly right in his remark, and of this I was long since satisfied, but amongst such a mass of weeds of various kinds it was difficult to ascertain in which of the plants it did bore, and, although I have sought diligently for the last four years, it was not till the 2nd of last May that I succeeded in finding it, not by seeing the stem bored in the first instance, but by observing one of the young shoots of the Artemisia in quite a drooping state. I at once suspected the cause, and took out my knife, cut the stem and the small bore off, and soon discovered the larvæ. After taking about a score I left the remainder, which were seen now, as the sprouts were just springing from the old roots, and were from two to three inches high. A week after the damaged sprouts were completely hid by their more vigorous fellows, and no one could have found them from any visible evidence in the plant without being told. I told Mr. Gregson about a fortnight or three weeks after, and in a few days he came to Warrington and went to the place, and, knowing it was there, of course found it. The larvæ on the 2nd of May were about half-grown, and must, I think, have hybernated, as I could not see any borings in the old roots. The colour was pale brown with three rows of black dots on each side, their position subdorsal, lateral and spiracular. On examining a full-grown larva I found the space below the lateral line greenish. The first imago emerged on the 29th of last month, since which date I have had eight more out.—*James Cooper; Museum, Warrington, July* 15, 1860.

Larva of Diplodoma marginepunctella carnivorous.—I have in my possession a larva of the above species, which I found at West Wickham last May, and, since I have had it, it has eaten one Tortrix, several common house-flies and some few Micros. I have never given it any green food, but kept it solely on insects, which it has greedily devoured.—*C. Healy;* 74, *Napier Street, Hoxton, N., August* 9, 1860.—*From the 'Intelligencer.'*

Larva of Talæporia pseudo-bombycella carnivorous.—I have also a larva of this species, which, after eating two house-flies and one male T. pseudo-bombycella, has fastened one wing of the deceased T. pseudo-bombycella to the top of its case, where it stands bolt upright, giving the case a very comical appearance.—*Id.*

Coleophora vibicella.—On the 3rd of July, 1859, Mr. John Bradley, of Worcester, conveyed some of the larvæ and pupæ of this species from Trench Woods, and distributed them amongst Genista tinctoria at Middleyard, near Bransford, Worcestershire: visiting that place on the 3rd instant I found numerous recent cases of the larvæ, and one fine imago.—*J. E. Fletcher; August* 7, 1860.

Observations on Coleophora melilotella.—Only a single example of this insect, for which I proposed the above name, has been reared, and this is now on Mr. Stainton's setting-board. It belongs to the same group as C. Frischella, and seems to stand intermediate between that species and Deauratella. In the specimen bred the green is of a different hue, and should this be the case with those captured in their natural haunts it will serve as an easy character to distinguish it from the allied species. There may be other characters as decided by which it may be recognised at first sight, but not having yet had an opportunity of making a minute investigation I leave the matter for the present, contenting myself with the fancy that I see C. conspicuella a drug and this new one conspicuous.—*John Scott;* 13, *Torrington Villas, Lee, S.E., June* 26, 1860.—*From the 'Intelligencer.'*

Larva of Asthenia coniferana.—I have bred A. coniferana from larvæ furnished me by W. Backhouse, Esq.; they feed in the bark of Scotch fir, turning part of the "frass" outside; they are dull yellowish white, with the head pale brown, and with no spots. Length about five-eighths of an inch.—*John Sang; Darlington, June* 1, 1860.—*Id.*

Carpocapsa Reaumurana.—Under this name I have given to many entomologists specimens of a Carpocapsa bred from chestnuts. It is described and figured by Réaumur, vol. ii. p. 501, pl. 40, fig. 13, 14, 15. It appears to be distinct from C. splendana, C. amplana and C. fagiglandana.—*Carl von Heyden.*—*From the 'Correspondenzblatt,'* No. 7, p. 55.

[This larva infests the chestnuts sold in London every year: I found of last year's produce that eighteen out of fifty contained the grub; the perfect insect I have never seen alive.—*Edward Newman*].

Ephestia pinguedinella.—It may perhaps interest some of your readers to know that Ephestia pinguedinella may now be taken and examined in all its stages, in the decayed bark of the ash. The larva, which feeds within the bark, forms a slight cocoon, with an opening to the air, and by removing the bark, which has been perforated in every direction by the insect, any number of pupæ or of larvæ may be collected from it. Whilst collecting some pupæ last week I found the pupæ, the larvæ, and the perfect insect depositing her eggs, as it appeared, all within the space of a few inches.—*Rev. B. H. Birks; Stonor, Henley-on-Thames.—From the 'Intelligencer.'*

Hymenoptera in repose.—Since the publication of the Rev. A. R. Hogan's note ('Intelligencer,' No. 193, p. 84) on the singular manner in which Hymenopterous insects are in the habit of reposing, three instances have come under my own observation, two of which occurred during the eclipse of the sun on Wednesday last: wishing to ascertain whether these individuals had settled themselves down for the night or whether their slumbers would end with the eclipse, I remained near the spot and kept an eye upon them. One had attached itself to the point of a blade of grass upwards of six inches in length, and, as a brisk wind was blowing at the time, the insect was in consequence continually being violently swung from side to side, notwithstanding which, and the unceasing buffets it received from the stems of the surrounding plants, it resolutely maintained its hold. No sooner had the eclipse ended, and the clouds (which make it an invariable rule to assemble on such occasions) dispersed, than both the insects woke up and were again upon the move, actively pursuing their ordinary avocations. Both these and the one I had observed on a previous occasion were of one species. I have sent one of the individuals to Mr. F. Smith, who will doubtless be obliging enough to name the insect. [Nomada ochrostoma].—*S. Stone; Brighthampton, July* 21, 1860.—*Id.*

Hymenoptera in repose.—Mr. Stone writes to say that he has sent you a communication respecting a singular mode of reposing observed during the eclipse last Wednesday, and desires me to furnish the name of the bee so discovered: it is Nomada ochrostoma, a female of the species. I may add that, a fortnight ago, on one of the dull mornings,—of which we have had so many lately,—I saw the same species of Nomada suspended at the side of Bishop's Wood, Hampstead. I suspect it is not an uncommon mode of reposing, but I never observed it before, although others have, and have published their observations. Mr. Stone asks me to add any observations of my own: the above is all I have to record.—*F. Smith; British Museum, July* 24, 1860.—*Id.*

[I believe I made the first observation on this curious fact in 1832; the species were Nomada furva and N. borealis (see Zool. 6468).—*Edward Newman.*]

Scarcity of Hymenoptera in 1860.—Bombi have not been so few in number since the year 1828 (a season of summer floods); the long frosty season in April and part of May kept them back, and the unprecedented wet weather in June destroyed two-thirds of the nests begun by the females. I have observed few males of any of the species in this neighbourhood; last summer they abounded, and the males appeared a fortnight before their usual time. I have captured one nest of the B. Derhamellus with about sixty inhabitants. Up to this day I have not seen one young wasp; at the commencement of May I saw several queen wasps: the wet weather seems to have destroyed the greater part of them also; last July and August they abounded in this locality. Perhaps some of the readers of the 'Zoologist' may make some remarks as to how these insects have fared in other places, and whether this scarcity be universal. The temperature in June and July has been on an average about 15 degrees below the same months last year,—nevertheless, when fine, a delicious temperature for exercise, being neither too hot nor too cold.—*H. W. Newman; Hillside, Cheltenham, July* 28, 1860.

Calosoma Sycophanta in the Isle of Wight.—A few days since some young friends brought me a large beetle to look at, which proved to be no less a prize than a splendid Calosoma Sycophanta. It was taken while crawling up the trunk of a tree, in a meadow bordering upon the sea-shore at Bembridge, having probably been disturbed by the hay-makers, who were then at work in the field. This is, I believe, the third instance in which the insect has been observed in the Isle of Wight, single specimens having been captured at Bonchurch, in January 1852, and at Freshwater in July, 1859 (Zool. 3359 and 6656).—*A. G. More; Bembridge, July* 12, 1860.

Rhynchites Betuleti.—I have taken both sexes of this beautiful species plentifully this year in the two-year-old clearings at Darenth. Early in the season only stragglers, and those chiefly males, are to be taken, settling in the sunshine on the leaves of any trees, though the hazel and dwarf aspen are their chief haunts. When found on the latter the small examples are at first sight hard to distinguish from large specimens of R. Populi (both species being variable in size, but they may be separated by looking at the under-sides, which in the latter are blue, the whole body being concolorous in R. Betuleti. At the end of June, when coupling, they may be found abundantly by examining the top twigs of the hazel bushes, and while doing this a net or umbrella must be held underneath, as the insect is crafty withal, and will drop to the ground on very little provocation; in which annoying "dodge," however, it is surpassed by the larger Cryptocephali, which roll over and escape if merely looked at. In very hot sunshine the Rhynchites sometimes unfurls its wings very rapidly and flies away, even during the short journey from the tree to the net. They appear to bite half through the tender stems of the hazel, about a couple of inches from the young terminal leaves, which shortly wither and hang down, as if damaged by the beating-stick of a collector; and in or upon these apparently unprofitable shoots a male and female will generally be detected. When no beetles are found the last leaf is curled up tight with a large oblong yellow egg in it. Having never observed more than one egg at a time I presume the female deposits on several shoots of the same or different bushes.—*E. C. Rye; 284, King's Road, Chelsea.—From the 'Intelligencer.'*

Hints to Bug Collectors.—As the promised Catalogue of the British Hemiptera cannot fail of giving an impetus to bug collecting, the following remarks may not be altogether useless, or considered out of place. At this period, and for some time to come, the collector will meet with numbers of undeveloped forms, which, if consigned at once to the laurel-bottle will be obviously useless as specimens, while if they are returned to the bough from which they were beaten or shaken, the chances are that when wanted they will not be forthcoming, or, in other words, that the collector will never meet with them again,—that is, in the case of species at all rare or scarce. What then is the course to be pursued? The plan I have adopted, and which I recommend to others, is to carry, in addition to the bottle containing bruised laurel leaves, one containing unbruised oak-leaves, if I am beating oak; sprigs of fir, if beating firs; birch, if beating birch, &c. Into this bottle I put all the immature specimens I am desirous of seing become matured. At home I have a large aquarium-glass, to which I have had a leno cover made; in this glass are placed three or four short, squat, widemouthed bottles containing water, in which I put sprigs from the trees off which my specimens were beaten. Here the insects live and thrive as well as they could possibly do in their native haunts, care of course being taken not to allow the plants upon which they feed to wither or dry up, but to renew them as often as they exhibit a tendency to do so; and as a few hours sun every day seems not only to be mightily enjoyed by the insects, but also doubtless greatly favours their development, it would be well to give them the benefit of it, in which case the plants should be changed on removing the glass into the shade. Although they draw much of their nourishment from the young and tender leaves of a plant, they appear to give the preference to the blossoms when they can gain access to them. I find maple in flower very attractive, but less so than oaks, which are now absolutely swarming with several species. So complete a metamorphosis takes place in some of the species that the colour and markings of an immature specimen are no guide whatever in determining what the insect will be like when matured. To-day you may observe a specimen of an uniform bright rosy pink colour, body and wings and all; to-morrow it will be found to have thrown off this livery and made its appearance in a sober suit of olive-green and black with just a reddish or yellowish tinge on the scutellum and a silvery patch at the tip of the wing. —*S. Stone; June* 2, 1860.—*Id.*

On the Transformation of Lymnophlæus marmoratus.—When the pupa of this species is about to undergo its final change it quits the pupa-case, which is composed of silk and small shells, or little bits of sticks or rushes cut into short lengths and arranged transversely; this case is left at the bottom, or, as it may happen, amongst weeds floating on the surface, but those from which my observations were taken were at the bottom of my aquarium, so that I had a full view of the creatures' proceedings. When it first quits the pupa-case the antennæ are folded back, but are soon outstretched, and, as it were, feeling its way through the water. Only four of its six legs are to be observed when it first quits the pupa-case; these are the anterior and intermediate pair. The posterior pair cannot be seen, as they are folded back beneath the body. This appears to differ from the observations recorded in 'Westwood's Modern Classification,' in reference to Hydropsyche atomaria, *Pict.*, but the generic characters and habits of the two may make all the difference. In the species under consideration the intermediate legs are used as natatorial, and not the posterior; this can only be seen when the creature is really shaking off its shroud of a pupa-skin, and as this becomes ruptured along the back the posterior legs are observed being drawn out from beneath the body. The intermediate or natatorial legs are furnished with long ciliæ to enable it to propel itself through the water from the bottom upwards to some plant where it can entirely rid itself of its skin. When the pupa has reached some leaf, while yet beneath the water, it appears to rest for awhile; the abdomen at the same time is kept in constant motion up and down. The pupal envelope or skin is much inflated round the abdomen, and seems only to be attached to the animal at the apex and the minute tubes leading to the trachea. These tubes are distinctly seen through the transparent pupal skin, and are darker in colour. The apical portion of the wing-cases are free, not as those of the Lepidoptera, attached to the sides of the pupa-case; the free apices are a great assistance to the insect when moving through the water. In this way, at every stroke of the natatorial legs, the creature is propelled forwards, but from its gravity being heavier than the element in which it moves would fall back again. These free apices, at every relaxation of the swimming legs, spread out and prevent the creature falling back, so that it is enabled to reach the surface. The antennæ, which were free when the pupa was moving through the water, becomes attached to the skin; each of these organs is laid along the back on either side the dorsal surface, before the final change takes place. The creature remains stationary for some little time; at length an uneasiness is observed with slight convulsions, and a small rupture is seen at the vertex of the eyes, and gradually the skin parts along the back, and Lymnophlæus marmoratus is seen merging into new life. The imago of this species is very variable in its coloration; those which I have bred have scarcely any colour, being almost white and transparent; others, again, are highly coloured; but this species may always be distinguished by the anastomasis being dark brown, nearly black: this is a very permanent feature in its specific character.—*Edward Parfitt; Museum, Taunton, July* 3, 1860.

Expansion of the Wings in Lepidoptera on Emerging from the Chrysalis.—For the last few years I have amused myself with observing the development of insect life, and amongst other facts that have presented themselves I have been struck with the anxiety evinced by Lepidoptera, on emerging from the chrysalis, to find some suitable object to climb upon. If nothing is near they will run frantically about in all directions, and nothing but absolute exhaustion causes them to cease their exertions. Should they meet with a suitable resting place, as a piece of wood, a tree or a wall, they begin to ascend, and having reached a position which suits them, at once compose themselves to rest and wait the expansion of their wings, which takes place in a most marvellous manner, and in a remarkably short space of time. Having at an early period observed this particular instinct, I have always provided some suitable contrivance for the accommodation of those moths or butterflies the pupæ of which I might happen to possess, and I have scarcely if ever had a cripple; others are not always so fortunate. Last year a friend of mine had a considerable number of pupæ of Smerinthus Populi, which he had reared from an early stage of existence. They were kept in a pan of earth covered with a bell glass, the sides of which the moths could not climb. As they emerged every one was crippled in the wings until I suggested setting up on the earth under the glass a triangle of three pieces of firewood tied together at the top, that the insects might follow their natural instinct; it was done, and from that time all the moths were perfect, having properly developed wings. We constantly hear of collectors and breeders of moths and butterflies being disappointed in the result of the pains they have taken during many weeks or months, by the production of crippled insects, more especially in the case of the large moths, as Acherontia Atropos. Is it not probable that this disappointment is due to the absence of that proper support which the Author of their being has rendered necessary for them at this critical stage of their existence? Observe a moth or butterfly on its emergence from the chrysalis, and you will see that its wings only exist as four little flaps of something soft and thick, as much like bits of coloured velvet as anything else; if you prick them with a needle nearly the whole of the juices or blood of the insect flows from the puncture, showing how delicate is their condition, and what an active state of vitality exists in the organs which in an hour after may be punctured with impunity; hence the anxiety of the creature to be securely located as speedily as possible, with the wings in a pendent position, in order that the fluid with which they are charged may the more speedily and certainly perform its function.—*Henry Deane; Clapham Common, August* 20, 1860.

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

August 6, 1860.—J. W. DOUGLAS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Catalogues of Natural History Collections in the British Museum,' *viz.* Lepidoptera, Part 1 (Papilio); Hymenoptera, Parts 1 and 2 (Chalcidites); Hymenoptera, Parts 1—7; Diptera, Parts 1—7; Homoptera, Parts 1—4, and Supplement; Hemiptera, Parts 1 and 2; Orthoptera, Part 1; Nomenclature of Coleoptera, Parts 3, 4 and 6; Coleoptera, Parts 7—9; Coleoptera of Madeira; Coleoptera, Part 1 (Cucuijdæ); Hispidæ; Neuroptera, Parts 1—4; Neuroptera, Part 1 (Termitina); British Animals, Parts 5—17; British Hymenoptera, Part 1; British Fossorial Hymenoptera; British Ichneumonidæ; British Curculionidæ; British Diatomaceæ; Marine Polyzoa, Parts 1 and 2; Lepidoptera Heterocera, Part 20. 'Proceedings of the Royal Society,' vol. x. No. 39; presented by the Society. 'Journal of the Proceedings of the Linnean Society,' Supplement to vol. iv. (Zoology); by the Society. 'Proceedings of the Royal Physical Society of Edinburgh,' vol. i.; by the Society. 'Catalogue of British Coleoptera,' Sheets K and L; by the Author, G. R. Waterhouse, Esq. 'Exotic Buterflies,' Part 35; by W. W. Saunders, Esq. 'The Zoologist' for August; by the Editor. 'The Athenæum' for July; by the Editor. 'The Journal of the Society of Arts' for July; by the Society. 'The Natural History of the Tineina,' vol. v.; 'The Entomologist's Weekly Intelligencer,' Nos. 192—200; by H. T. Stainton, Esq. 'Linnæa Entomologica,' vol. xiv.; by the Entomological Society of Stettin.

Exhibitions.

The President exhibited specimens of Stathmopoda pedella, one of the Tineina hitherto so extremely rare in our collections that only two or three examples were known. He found it in abundance in July in the foliage of alder trees at Lewisham, and other persons had also taken it there, so that more than 200 specimens had been captured. Professor Bohemann had recently informed him that this moth was not scarce in Sweden, but he was not aware that the larva had been observed since Linneus wrote of it, "Habitat in Alni foliis subcutanea." It was to be hoped that with this guide to its habits no long time would now elapse before the larva would be re-discovered. The President called attention to the peculiar position in which the spinose hind legs were held in repose—turned under the wings and extended laterally in front of them—a peculiarity which had been noticed by Linneus. Even when the moth walked, these legs were rarely put down, so that the creature usually walked about by means of its other four legs only.

The President also exhibited a specimen of Phloiotrya rufipes, found dead under the bark of an old oak at Leatherhead Common.

Mr. Bond exhibited specimens of a Trochilium, recently taken by Mr. G. King at Torquay; and also some examples of apparently the same species from the collection of J. R. Hind, Esq., captured in Spain, and labelled Philanthiforme.

The species taken by Mr. King, as far as can be ascertained from the damaged condition of his specimens, appears to be the S. Muscæformis of Esper, originally recorded as a British species by Mr. Newman, in his "Monographia Ægeriarum Angliæ" (Ent. Mag. vol. i. p. 79), on the authority of a specimen in the collection of Mr. J. F. Stephens; the species was also given as British by Mr. Stephens in the Appendix to his 'Illustrations' (Haust. iv. p. 385), on the authority of the same specimen, which, however, he subsequently considered to be merely a variety of S. Ichneumoniformis, and placed it as such in his 'Catalogue of British Lepidoptera in the Collection of the British Museum' (Part 5, p. 31). This specimen (now contained in the collection of the British Museum) is unquestionably a damaged example of S. Ichneumoniformis.

Mr. Janson exhibited three unrecorded species of British Coleoptera, recently taken by Charles Turner at Rannoch, Perthshire, and made the following observations respecting them:—

Rhopalodontus perforatus, Gyll. *Cis perforatus*, Gyll. Ins Suec. iii. 385, 7 (1813). *Rhopalodontus perforatus*, Mellié, Annales de la Soc. Ent. de France, Ser. 2, vi. 234, tab. 9, fig. 23 (1848).—The first indigenous example of this pretty little insect which came under my notice I obtained from the late James Foxcroft, mixed up with some scores of Cis nitidus, reared during the winter of 1853-4, from a hard woody boletus he found on the trunks of old birch trees in the Black Forest, Perthshire, and which, remarking that it was perforated by innumerable minute coleopterous larvæ, he brought up with him to London the previous autumn. Turner, who carefully examined the specimen, and to whom I pointed out its most obvious distinctive characters and communicated its history, has succeeded in securing upwards of thirty examples.

Rhagonycha elongata, Fallen. *Cantharis elongata*, Fallen, Mon. Canth. i. ii. 8 (1807); Gyll. Ins. Suec. i. 335, 8 (1808). Nearly allied to Rhagonycha paludosa, *Fallen*, *Gyll.*, exhibited by me at our last meeting, but readily distinguished from it by its superior size, relatively narrower from the pale basal joints of its antennæ, pale apex of its femora and base of its tibiæ, and its subquadrate prothorax, of which the posterior angles are salient. Gyllenhal and Sahlberg inform us that this species "habitat in frondibus abietis." Zetterstedt remarks that it occurs likewise on birch "in Betuletis Nordlandiæ et Finmarkiæ;" from Turner, who is far from communicative touching his craft, all the information I can elicit is that he "got it in a very strange way."

Brachonyx indigena, Herbst. *Curculio indigena*, Herbst, Natur. Syst. Col. vi. 170, 130, tab. 71, fig. 12 (1793?). *Rhynchaenus indigena*, Gyll. Ins. Suec. iii. 71, 7 (1813). *Brachonyx indigena*, Schoenh. Curc. Disp. Meth. 232, 132 (1826); Gen. et Spec. Curc. iii. i. 329, 214 (1836); Guérin, Icon. Ins. 145, tab. 38, fig. 3 (1833?).—This species is found, according to Gyllenhal and other continental authorities, "in Pini Sylvestris frondibus." Turner, to whom I sent instructions to search for it on this tree, asserts he beat it from birch. Although of not unfrequent occurrence in Sweden, Finland, Lapland, and in the mountainous districts of central Europe, it would appear to be exceedingly rare in Scotland, as Turner assures me that every effort on his part had yielded three examples only, one of which is unfortunately mutilated.

Mr. Waring exhibited two fine specimens of Acidalia rubricata, and a beautiful female of Lithostege nivearia, taken near Brandon, Suffolk, during the present season.

Mr. Scott exhibited the following Lepidoptera:—

Coleophora binotapennella. Bred from larvæ found two years ago at Brighton.

Tinea caprimulgella. Found on the trunk of a tree in Blackheath Park.

Ephestia semirufa, Haw. Found abundantly near Lewisham, as also the variety rufa described by Haworth as a species. Mr. Doubleday informed Mr. Douglas that he had seen no specimens of this insect since he received it from Mr. Dale many years ago.

Mr. Scott also exhibited the following Coleoptera :—

Deleaster Dichrous, Grav. Taken at Crwmlyn, Monmouthshire. June.
Stilicus fragilis, Grav. Taken at Crwmlyn, Monmouthshire. June.
Clythra 3-dentata Found at Darenth Wood.

Mr. Mitford exhibited a beautiful series, including both sexes, of Nemotois cupriacella, lately caught at Hampstead: though the female of this species has been frequently taken in various parts of England, the male had not previously been captured.

Mr. Miller exhibited a number of interesting Micro-Lepidoptera, including an apparently new species of Coleophora bred from larvæ which fed on hazel, and a Lithocolletis, the larva of which mined in leaves of the plum tree.

Mr. F. Walker exhibited a remarkable variety of Lasiommata Megæra, and made the following observations respecting it :—

This singular variety of L. Megæra, if it had been found in a distant region, would perhaps have been considered to be a distinct species. It was taken by my son in Guernsey. The upper surface somewhat resembles that of L. Clymenus, a Russian species, and in the band of the fore wings of the male not being forked it approaches L. Tegelius from Corsica. The most decided peculiarity is in the under side of the hind wings, and it appears to differ as much from L. Megæra as the latter does from L. Mæra and L. Mæroides, *Boisd.*, found in Hindostan ; this last species hardly differs from L. Mæra. Examples in the British Museum of L. Megæra from Persia in no wise differ from the European specimens.

Mr. Waterhouse exhibited specimens of the Cychramus fungicola of Heer and Erichson, an insect which he believed had been commonly confounded in this country with the C. luteus. The C. fungicola, however, might be distinguished by its more convex form, stronger punctuation, less dense and coarser pubescence, and, usually by the disc of the elytron being clouded with brown.

A series of C. luteus was exhibited, with the C. fungicola for comparison. Mr. Waterhouse stated that he believed both speeies were equally common, and that he had taken them both at Darenth Wood, Birch Wood and Erith. He here observed that the second species of Byturus (*viz.*, B. fumatus) he had this year found both at Darenth and Birch Woods; that at the time he first called attention to the existence of B. fumatus in England, he was not aware of the localities of the very few specimens which came under his notice. The B. fumatus he was aware had been taken by other entomologists in the London district; he had seen specimens captured by Mr. Douglas and Mr. Stokes.

Mr. Waterhouse then exhibited specimens of two species of Ceuthorhynchus, which had to be added to our list of British Coleoptera. The first was the C. Syrites of Germar, Gyllenhal and Schönherr. The specimens exhibited were found by sweeping in the field opposite the inn at Birch Wood Corner, on the 11th of July last, and he had taken a single specimen at Erith on the 26th of June last.

The C. Syrites is nearly allied to C. assimilis, but may be distinguished by its shorter and more convex form, the larger size of the white scales (which are very dense, and form a white line along the suture), with which it is clothed, the somewhat coarser sculpturing, and, lastly, by the apical third of the elytra being covered with minute tubercles, both on the upper surface and sides. Formerly another species of Ceuthorhyncus had been mistaken for the C. Syrites, *viz.*, the C. inaffectatus of Schönherr, a more oblong and more depressed insect, readily distinguished by its femora being dentate, on which account it is placed in a separate section.

The other species exhibited was the C. tarsalis, of which Mr. Waterhouse had taken specimens at Erith, on June 26th, by sweeping. It was found in company with C. sulcicollis, which it much resembles. Like that insect it has a patch of pale (either yellowish or almost white) scales on the sides of the chest, at the angle between the thorax and elytra, but its form is more elongate and depressed, and, instead of being dull black above, it is somewhat glossy, especially the elytra, which, moreover, have a slight metallic tint, usually of a bronze hue. In its form it more nearly approaches the C. cyaneipennis, from which it may be distinguished by its dark colouring, and the pale patch of scales already alluded to, and from both the species named it differs in having pale testaceous tarsi.

Mr. Waterhouse then proceeded to observe that Mr. Walton, having prepared a Catalogue of the British Curculionidæ for the British Museum, and all the desiderata of the Museum British collection being marked in this Catalogue, he, with his well-known liberality and public spirit, then presented to the public a series of all the species which were desiderata to the Museum, including the unique specimens. Among these specimens thus presented are two British specimens of a Ceutorhynchus bearing the name "tarsalis;" there is, also presented by the same gentleman, a third insect with the same name, this last having been received by Mr. Walton from Germar. With Germar's specimen the insect exhibited by me as C. tarsalis agrees perfectly, as it does likewise with Schönherr's description, but when compared with Mr. Walton's two specimens I notice differences which lead me to doubt if they be the same species; they want the metallic gloss on the elytra, are rather more convex, the striæ of the elytra are rather more strongly marked, and the interstices are more strongly rugulose; moreover, the tubercles at the apex of the elytra are much less distinct. I cannot help thinking that the two insects in question will prove to be varieties of the C. sulcicollis, in which the tarsi are piceo-rufous instead of black. It seems to me probable that Mr. Walton had some doubts of this identification, and hence did not introduce the species C. tarsalis into his list. An insect which appeared to me to agree with Mr. Walton's I now exhibit: it certainly is a very rare circumstance for C. sulcicollis to have the tarsi ferruginous; for I have examined an immense number of specimens, and this is the only one I have seen, with the exception of the two specimens in the Museum already alluded to.

Mr. Waterhouse also exhibited a specimen of Trox hispidus of Laichart, and likewise a specimen of Crioceris dodecastigma of Panzer, both of which he had reason to believe were English; he knew not the locality of either, and his object was to call attention to these insects, through which he thought it possible to learn some definite localities for them.

Of these insects he has possessed a specimen of each for years; they were given to him by his friends, and were supposed both by him and them to be the nearly allied British species, *viz.*, Trox sabulosus and Crioceris 12-punctata. The Trox Mr. W. had long back separated from sabulosus, but could not identify with any description, but recently Dr. Power brought to him for identification a species which appeared to him distinct from others. With this Mr. W. was able to satisfy himself that Dr.

Power's insect is the Trox hispidus of Laichart, and that his own insect is a variety of the same, in which the thorax is very sparingly punctured, whereas it should be rather thickly punctured. The species is readily distinguished by the alternate rows of smaller and larger tubercles on the elytra.

The Crioceris dodecastigma, which has until quite recently been confounded in his collection (never having been looked at probably since it was received), is distinguished from C. 12-punctata by the legs and under parts of the body being entirely black, instead of red. The orbit of the eye is also entirely black, and the antennæ are less stout, &c.

Mr. Rye exhibited a specimen of Deleaster dichrous, taken in a house at Glasgow; a female of Odontæus mobilicornis, from Darenth Wood; and a singular male example of Rhynchites betuleti, destitute of the usual spines on the thorax.

Mr. Westwood exhibited some examples of the pupæ of Papilio Machaon, received from Dr. Verloren, and detailed some experiments by him, proving that the well-known diversity of colour in the pupæ of this species is not indicative of the sexes, or of any variation in the colours of the imago.

Natural Cross Breeding in Bees.

Mr. Tegetmeier described a series of experiments he had been making recently to ascertain whether there existed any natural means for preventing continued interbreeding in the honey bee. He stated that his own experience, as a breeder of several varieties of vertebrate animals, was that continued interbreeding led to deterioration of size, great delicacy of constitution, and ultimately to extinction of the race. It had been alleged, in opposition to these views, that continuous interbreeding was not injurious to the bee, the young queens being supposed to be fertilized by the drones of the same hive, bred from the same parent. It is well known that on a stranger worker bee attempting to enter a hive it is at once seized by the guards, and, unless it succeeds in escaping, stung to death. He found that on placing drones captured as they entered one hive at the entrance of another they ran in and were readily received. In order to ascertain whether they ever willingly entered other hives than those from which they emerged he marked them as they flew forth, by dusting them with flour, and observed that about one-third of the whole number flew into other hives on their return. The workers do not appear to distinguish between stranger drones and those of their own hive; in fact the drones seem common to all the hives in an apiary; hence, even supposing a young queen to be always fertilized by the drones inhabiting the hive in which she is reared, continuous interbreeding must of necessity be prevented.

Mr. Tegetmeier also exhibited reared specimens of Apis Ligustrica, from a hive of that species at the Apiary, Muswell Hill, London.

Mr. Westwood read "Remarks on the Effects of Time and Heat in the Development of certain Sphingidæ," being the results of most elaborate observations, by Dr. Verloren, on Sphinx Ligustri and other species.

Mr. Scott read descriptions of four new species of Coleophora, *viz.*, C. Melilotella, C. Artemisiella, C. Ardæpennella and C. politella.

Part 6 of the current volume of the Society's 'Transactions' were announced as published.—*E. S.*

BOTANIST'S CORNER.

***On the Natural Affinities of Lastrea Thelypteris.*—Has the fern usually described as Lastrea Thelypteris been assigned a proper position by our writers on ferns? I was forcibly impressed, on first seeing it in a wild state, with its numerous points of resemblance to the common brake. Many common characters seem to bring the two plants into very close affinity. Each has its creeping rhizome, and a substantial distinction can scarcely be drawn between the marginal line of fruit in Pteris and the almost confluent sori of Thelypteris. The difference appears to me little more than a question of quantity. The venation of their pinnules is identical, except that in the more compound fronds of Pteris the veins are *twice*, instead of once, dichotomously divided, and bearing in mind that the quantity of sori depends on the quantity of veins. The fewer veins in Thelypteris would quite account for the line of fructification being interrupted in it, whilst confluent in Pteris, without the difference being sufficient for a generic distinction. The capsules of each are partly covered by the convolute margins of pinnules and the evanescent nature of the true indusium common to them both. The decided difference between the barren and fertile fronds of Thelypteris would also seem to connect it with Pteris, through the allied genus Allosorus. If botanists object to Mr. Newman's separation of Thelypteris into a distinct genus ('British Ferns,' 3rd edition), I think they should associate it with the genus Pteris rather than Lastrea, and (supposing the order in which Mr. Newman describes the genera is intended to represent their affinities) that his new genus Hemistheum ought to be placed more immediately adjacent to Pteris.—*George Maw; Broseley, July* 20, 1860.**

Discovery of Lathyrus tuberosus at Fyfield, near Ongar, Essex.

LATHYRUS TUBEROSUS (Tuberous-rooted Vetchling, or Everlasting Pea), *Linn. Sp. Pl.* 1033. *Gerarde's Herbal*, p. 1057. Roots perennial, fibrous, with many large black tubers, penetrating the soil deeply. Stems climbing two or three feet high, four-sided, not winged; leaflets oval, in pairs; stalks many-flowered; flowers a fine rose-colour, with a little of the fragrance of Lathyrus odoratus; blossoms from July to September. Frequent in corn-fields in many parts of Europe, especially in France, Germany and Italy. Said to have been cultivated in Holland for the sake of its tubers, which are edible when boiled.

Gerarde says that it is found in Hampstead Wood, near London, Richmond Heath and Coombe Park, but Babington doubts the correctness of these localities, and at all events no modern botanist has found it there, nor is it mentioned as a British species by Ray or Hudson. The parish of Fyfield is several miles in extent, and the soil is a very strong heavy clay, with a subsoil of calcareous marl. The plant in question is found abundantly in almost every corn-field and hedge-row in the parish, and also in the adjoining one of Willingale Spain, and probably in High Ongar. In some places it is so abundant as to damage the corn, and it has grown in the same fields for the last sixty years, at least according to the testimony of old men living at Fyfield, so that no doubt can exist as to its being a truly wild plant. I suggest that it may be called the "Fyfield Pea."

Norton Mandeville, where Bupleurum falcatum was discovered by me many years since, is in close proximity to Fyfield, and I have since found that plant in a new locality, at Writtle, four miles from Chelmsford. I may also mention that the very rare Lathyrus hirsutus is found at Nasing, Essex, in a field near the church, growing with Lathyrus sylvestris, L. Aphaca and L. Nissolia, and also the scarcely less rare Vicia bithynica, all in the space of a few square yards.—*Thomas Corder; Kimpton, near Bedford, August* 20, 1860.

[There is a figure of this beautiful plant in Curtis's 'Botanical Magazine,' pl. 111, and Mr. Watson, to whom I communicated the interesting fact of its discovery in Essex, says, "This might reasonably be expected in Essex as a wild plant, subject only to the doubt suggested by so showy a plant having been so long overlooked in a metropolitan county, if aboriginally native. The species is widely spread in Europe. Italy to South Sweden, eastward into Siberia, westward to Denmark, Hanover, Holland, Belgium, West France, on faith of their Floras." Can Mr. Corder dry a few specimens? They will be most acceptable to British botanists.—*Edward Newman.*]

The Dugong: the valuable Medicinal Properties of its Oil in Consumption and various Diseases. By JOHN MCGRIGOR CROFT, Esq., M.D., M.R.C. Physicians, London, late Medical Officer to H.M. Ceylon Rifles in China and Ceylon, and Staff Surgeon to Her Majesty's Forces.

[The talented author of the following observations having placed them in my hands, I have much pleasure in presenting them to the notice of the readers of the 'Zoologist, who will, I am sure, agree with me that so important a discovery in Medico-Zoology ought to be made known as widely as possible.—*Edward Newman*].

THIS species is a native of the Indian Ocean, and principally observed among the islands of the Indian Archipelago and the coast of New Holland. It is frequently seen in considerable numbers on the coast of Ceylon, especially along the northern shore of the island, among the inlets from the Bay of Calpentyn to that part of Ceylon called Adam's Bridge, where the water is still and the seaweeds abundant. These creatures may be observed in troops, feeding, where the ocean is clear, at a depth from three to four fathoms. The position of the mouth in the dugong, and the muscular powers and mobility of the lips, a large, thick and powerful upper lip falling over the lower, and endowed with great muscular power and mobility, enable the animal to seize and drag up its food. The Malays endeavour to capture these phytophagous cetaceans, so also do the aborigines of Australia, the flesh being exceedingly rich, and tasting like veal. Sir James Emerson Tennent, late of Ceylon, saw one of these creatures, which was sent to him at Colombo, in 1847; it had been killed at Manaar, and measured upwards of seven feet in length, but specimens considerably larger have been taken at Calpentyn. The male and female dugongs are very affectionate to each other, and especially so to their offspring; when the latter is killed, the mother can scarcely be induced to leave her enemies, and falls an easy prey.

The dugong obtains considerable length and size; the outline of the horizontal tail-fin is crescent-shaped, and a large thick upper lip falls over the lower; the skin of the body is thinly set with short prickly bristles; the anterior limbs or flippers are destitute of nails, and the eyes are very small. A short description of these creatures is necessary, and will no doubt be received with satisfaction, considering that eight or ten gallons of oil may be obtained from an ordinary dugong, the extraordinary properties of which I have been, I believe, the first to test in this country. At Brisbane and Moreton Bay, Australia, the natives catch the animal and greedily devour it.

Dr. Hobbs, a medical practitioner at the latter place, had his attention drawn to the oleaginous properties of the dugong, and for some time past prescribed the oil with advantage where he would have advised cod-liver oil.

For the last twelve months I have been in possession of the oil for the purpose of testing its value, and submitted it to the analytical opinion of my respected friend, the eminent chemist, Professor Taylor, of Guy's Hospital, who has kindly allowed me to state that he considers the oil "very palatable," in fact agreeable, differing in that one point specially from the best cod-liver oil. Its component proportions are exceedingly harmless, stearine in excess, and it can, in his opinion, be taken, without any ill effects, by the most delicate lady, child or invalid. I have communicated to Professor Taylor the results of the use of this remedy in cases of scrofula and consumption, which has led him to give his opinion that an oil so agreeable, with such results, is decidedly a most valuable and important remedy.

As my object is merely to give temporary information to the public, I shall mention a few facts in confirmation of my statement.

A young lady, aged 17, residing in Harley Street, Portland Place, came under my medical care some time since, at the request of her family. She was a perfect skeleton, complexion extremely fair, light hair, of moderate height; her system was saturated with scrofula, had a hacking cough, and evident dulness on percussion, over the apex of the right lung particularly, also slighter over the left. Stethoscopic diagnosis inferred tubercular deposit in these portions of the lungs; scrofulous enlargement of the cervical glands on the right side of the neck, and tumours of the same about the wrist joints; added to all this, a scrofulous abscess, communicating with the head of the left tibia, or large bone of the leg, at the knee joint. A more unpromising case I never took in hand. It appears she has had the most eminent advice for the last three years, but nothing did good; the best cod-liver oil, vaunted as a "specific," was too nauseous, and, though tried, of no service. She therefore, with slight preliminary treatment and regulated diet, commenced to take the dugong oil in small doses, increasing gradually; the oil being agreeable required nothing to disguise it, and, to use her own words, after taking a few doses she felt sure she should be benefitted by it. In all cases I carefully weigh the patient, and the result in this young lady was one quarter of a pound increase after taking small doses the first week. Every week after, on increasing the dose of oil, her weight multiplied, and at the end of two and a half months she had gained six pounds and a quarter, looked plump, complexion healthy, with clear bloom on cheeks, scarcely any cough, tumours softer and smaller, less discharge from the abscess at the knee joint, able to get out and walk well,—in fact her family were quite surprised at the decided improvement. She still continues the oil without the slightest repugnance, and this remarkable amendment is the result of taking a pint and a half of the dugong oil. This case is highly satisfactory, having watched her with great interest, and I have her family's permission to make this statement. She will in the course of a short time be a healthy, stout young person.

Through the kindness of Sir John Forbes, M.D., Physician Extraordinary to His Royal Highness Prince Albert, Physician in Ordinary to Her Majesty's household, and Consulting Physician to the extensive Hospital for Consumption, at Brompton,—also with the friendly assistance of R. Payne Cotton, Esq., M.D., Visiting Physician of the Hospital—I was permitted to choose a patient in their establishment for the trial of the oil, and Dr. Cotton kindly undertook to observe all my suggestions in the use of the same.

The case was one considered very suitable by the Physicians, and having diagnosced the patient (a male), the medical gentlemen present agreed with me that it was a serious case of advanced consumption. The symptoms were constant cough, with purulent expectoration tinged with blood, great difficulty of breathing, profuse night perspiration, and diarrhœa. The poor man was much emaciated, and evidently could not last long in his present state. Some time before coming under my treatment he had tried the best cod-liver oil, but found it too nauseous, and, he remarked, did him no good. The patient was weighed, and placed on a certain class of diet. He did not know at at first the kind of oil administered; this was concealed from him, that his imagination might not create a false idea of its effects. The results of the use of the oil after the first week astonished the medical men. "Increase of weight, less difficulty of breathing, bloody expectoration checked, scarcely any profuse perspiration, diarrhœa stopped, appetite better; in fact, the results of the treatment were already apparent." He expressed his satisfaction in taking "some oil" that agreed with him. Each week, for a month, I visited him, and after taking a bottleful of oil, the results of improvement were so evident — especially in weight, less cough, healthy complexion and colour; in fact, a great amendment on the first report for the better—that, to use Dr. Cotton's own words in a letter to me, no one was more astonished at the results of the treatment than the poor fellow himself. I need not remark that the patient, from the interest taken in his case, was aware of something being tried, and he begged to be allowed to shake hands and thank me for what had been done. This is also a very satisfactory result of the use of the dugong oil.

I could state many other cases, but those mentioned are sufficient. Not only in consumption has the oil proved beneficial, but in cases of chronic dyspepsia with frequent constipation, or oftentimes accompanied with frequent diarrhœa, has this remedy proved valuable. Young females particularly seem to benefit from it, and several persons who have resided in tropical climes, with the digestive organs impaired, or suffering from chronic dysentery, have derived great benefit where nothing else seemed of use. I would particularly point out that diet in this treatment is an all-necessary adjunct, and I may add that a long residence in Oriental and Australian lands, in Her Majesty's service, has afforded me that experience which is denied the resident physicians of England.

J. McGrigor Croft.

Mandarin Villa, 8, Abbey Road,
St. John's Wood, January, 1860.

A Mole taking to the Water.—An acquaintance of mine was lately walking by the side of the river Taw, near here, and observed a mole swimming across the river: he could not credit it at first, and waited until it arrived at the side. A boy was at the other side, who got the mole and attempted to throw it across, but did not succeed, and the poor thing made another, but this time ineffectual, attempt to reach the shore, and was drowned. My friend then got it out, to make sure that it was a mole, which it proved to be.—*Edward Parfitt; Museum, Taunton, August* 20, 1860.

Indigenous and Occasional Visitors to the Avi-Fauna of Europe.—I have read the remarks of Mr. Alfred Newton, in the 'Zoologist' for August (Zool. 7145), upon the increasing lists of European birds, from the occasional appearance of the inhabitants of other quarters of the globe, and will, with your permission, offer one or two observations upon this interesting subject. I think it will be admitted by all naturalists that the task of making out a truly indigenous list of the Fauna of Europe is one of extreme difficulty; and I do not think such a list, as applied to birds (to which I now confine myself), would meet the requirements of ornithologists. The object of defining the lists of birds belonging to any country is two-fold: *first*, it is intended to illustrate by these lists those birds which, as far as can be determined, are peculiar to that country—those that live and breed there; but, *secondly*, it is equally important for the student to know something about those which are occasionally seen there. A bird which is observed once will be eagerly looked out for again, and will not be unfrequently found. Upon very good authority I introduced into my work upon the 'Birds of Europe' Regulus calendulus of North America, which was captured in the Scottish Highlands; and, while the sheets were in the press, I heard of a second example which had been taken by a pitman in Durham, and which came into the possession of Mr. Tristram in the flesh. It is only a few years ago that its congener Regulus ignicapillus was discovered by Mr. Jenyns in the mouth of his cat, and the publication of this fact led to the discovery that the bird was a regular inhabitant of the country. This, I think, illustrates sufficiently well the propriety of including in our European or British lists all birds that are even occasionally found in one area or the other. The scientific naturalist, or even the early student, will readily separate the two classes of birds, and thus, while no harm is really done to scientific precision, additional knowledge is diffused, and we have the benefit of seeing and hearing of forms which would be otherwise shut up in Audubon's splendid folios or other works of the kind. It thus appears to me that it is absolutely essential to adopt in our lists the rule which all really good ornithologists have followed, whether Temminck, Schlegel, Bonaparte or Selby or Yarrell in our own country. The lists speak clearly what they mean, if characterised by a mark like that of the 'Zoologist List of British Birds,' and I think the readers of historic works upon the subject will not be ungrateful to their authors for the additional trouble and expense by which they are made acquainted with new forms, which it is quite possible they may again meet with in their naturalists' rambles. Larus ichthyætus, or even Falco leucocephalus may again be found wandering either into Russia or Great Britain, and we shall be none the worse for the additional knowledge by which we shall be enabled to welcome them as familiar friends.—*C. R. Bree; Colchester*, *August* 6, 1860.

Kestrel feeding Chickens.—I had known that the master of the Cirencester Union kept a female kestrel, which was usually at liberty in one of the yards, and having for her companion a jackdaw; last year she laid, on the straw in her box, two eggs, one of them of the ordinary shape and colouring, the other more oblong and the colour paler, but much darker at the large end: I have these eggs, which, on shaking them, seem to contain a fluid. At the end of last month a hen hatched a brood of chickens, she being confined in a coop, the little ones running, as usual, in or out of the cage, as they pleased. One day the master of the Union gave the hawk a piece of raw meat, and was much astonished to see her run off immediately towards the coop, and draw away the young chickens, which she, in the kindest and most attentive manner, began to feed, by tearing the meat in pieces and presenting it to their bills, as she would have done to her own young; but the chicks did not seem to comprehend well her intention at first, generally preferring to pick up the meat from the ground, the hawk scattering it about her. One delicate chick seems to receive more attention from the hawk, and keeps closer to her, receiving a larger portion of food. The gentle and affectionate manner in which the hawk presents the morsels of meat to the young birds is most pleasing to witness: at first she will hold up the whole piece of meat to the chicks, which, I presume, is intended to draw them off to a distance from the hen, who at first was greatly alarmed at seeing her young ones in such dangerous company. One morning the hawk seemed to have devised a method to appease the hen, for on being fed she ran off straight to the coop with the piece of meat in her bill, and presented it to the hen, as if to say, "See here, I am only going to feed your young ones with this," and suiting her actions to her words fed them at a short distance off; since then the hen has appeared perfectly satisfied. One morning I saw the hawk scratching the ground and shaking her wings as a hen does when she wishes to gather her little ones under them, and I think that it was really the motive of the hawk to draw them around or under her. An account somewhat similar is related by Yarrell of the buzzard; but I do not learn that the kestrel sat on her own eggs, which she laid last year. It will be seen that the period in which these fond attentions have been paid to the young of another bird is considerably later than usual, the young of the kestrel being hatched about the end of March or beginning of April.—*Joshua Brown; Bartonbury, August* 4, 1860.

Robins and Titmice reared in one Nest.—A short time ago, when looking for bird's nests, I discovered a robin's in a hole, about five feet from the ground, in a chestnut tree; the nest contained five eggs. Being the first I had found this summer, I determined in a day or two to take one egg. The third or fourth day after I first found the nest I went to the tree; to my great surprise, I saw some very fine hair and wool close to the mouth of the hole inside; I just peeped in, and out flew a blue titmouse. How the ingenious and impudent little fellow had become possessed of the robins' chosen place I cannot conceive. I only saw the robins once after. The bold titmouse very soon returned, and in a few days had deposited eggs amongst the robins. As soon as it began to sit, I hollowed out a piece of stick and took two robin's and three titmouse's eggs out of the nest; there were left six tits and three robins. In due time the eggs were hatched, and the old tits tended the robins the same as their own. One morning I thought they would be ready to fly, and I got a lighted taper and inserted into the hole; to my surprise, they were all flown but one little tit,—in about an hour afterwards it was gone as well. I then got the nest out as well as I could, and found one robin's egg left, so that two robins and six titmice were all reared in one nest.—*L. Appleby; Middleton Lodge, July* 29, 1860.

The Hawfinch breeding in Norfolk.—In the 'Zoologist' for 1846 (Zool. 4946), I recorded the first instance that had ever come to my notice of the hawfinch remaining to breed in this county, at which time a young bird, now in my possession, was shot in Kimberley Park. On the 20th of July last I was shown an immature specimen, obtained at Easton a few days before, much resembling my own, but if anything rather more advanced in plumage. I am more and more convinced, from inquiries made of gamekeepers, gardeners and others employed in likely haunts for these shy birds, that these two are by no means solitary instances of the hawfinch nesting in this county, although their peculiar watchfulness and the dense foliage they usually frequent render it extremely difficult to detect their presence amongst us, except in such accidental cases as the above. After the unusual number of these birds that appeared in this district during the winter and spring of 1859-60, being met with as late as the middle of April, the wonder is rather that several nests have not been taken than that one solitary nestling should attest the probability of many more undiscovered.—*H. Stevenson; Norwich, August* 16, 1860.

Snipes in Summer.—On the 9th of this month a friend of mine was sent to me to say there were hundreds of snipes on the moors: these so-called "Moors" are a long, low, marshy tract below Bridgwater, and, from this dull wet season, have been pretty well covered with water. My friend and an acquaintance went, and lo and behold! there were hundreds of snipes; and they were told that if they had been there a day before they might have seen many more: however, as it was, notwithstanding the difficulty of getting about, from the quantity of water, they did pretty well. The two gentlemen killed seven brace, which were in capital condition. Now the question is, From whence came these snipes—the veritable Scolopax gallinago? They were evidently migrating somewhere, as they stopped so short a time. The record of their appearance at other places would be interesting, to shew their line of route; we might then possibly see to where they were bound.—*Edward Parfitt; Museum, Taunton, August* 20, 1860.

Great Flocks of Scoters in July.—I was at the mouth of the Ribble on the 7th of July, and, to my great astonishment, saw several very large flocks of scoters; in all there must have been over a thousand. They were exceedingly shy, and would hardly let the yacht come within two or three hundred yards. There were amongst them several velvet ducks, easily distinguished by their size and the white on their wings. Where could all these birds have bred, so as to be here so early. There are always a few to be seen almost all through the year, but I never recollect seeing such large flocks so early. I shot one bird, evidently a young one, but whether it was a common scoter or velvet duck I could not decide. The beak was very broad and black, and all the plumage black, except the neck and the lower part of the head, which was dusky brown.—*E. C. Buxton; Daresbury Hall, Warrington, August* 4, 1860.

Abundance of the Common Lizard (Zootoca vivipara) *in Ireland.*—If you consider the following fact worthy a place in the 'Zoologist' it is much at your service: it is interesting as opposed to the opinion of naturalists and others, that reptiles do not inhabit Ireland. In the month of June last the common lizard (*Zootoca vivipara*) was to be found in vast numbers everywhere in the county of Down. They were most varied both in size and colour; in size varying from one inch to four inches in length, and in colour from pale fawn to jet-black. What renders this circumstance more remarkable is that they never occurred here before, excepting a single individual at a time, and those at long intervals.—*F. Bewley, Clerk; Laurencetown, Co. Down, July* 25, 1860.

Unusual Modes of Gestation in Batrachians and Fishes.

AMONG Batrachians the circumstances under which the young are developed, though less varied than in some of the other classes of vertebrates, still present a considerable range. By most species the eggs are deposited in the water, either upon aquatic plants or on the bottoms; by others, as in Salamandra erythronota, they are laid in damp places under logs or stones; with some the evolution of the embryo commences a short time previous to the laying of the egg, and is completed subsequently, while there are species which are wholly viviparous. The most remarkable deviations from the ordinary modes are to be found in those instances in which the eggs, after being laid, are again brought into a more or less intimate relation with the parent, as in the "swamp toads" (*Pipa Americana*) of Guiana, where each ovum is developed in a sac by itself on the back of the female, in Notodelphys of Venezuela, where all the eggs are lodged in one large sac also on the back, analogous to the pouch of the marsupials, and in Alytes, the "obstetric toad" of Europe, where the eggs are wound in strings around the legs of the male, who takes care of them until they hatch.

The species, the habits of which are noticed below, and which, in so far as I have been able to learn, have not attracted the attention of naturalists, adds another to the series just mentioned, though the relation of the fœtus to the parent becomes less intimate than in any of the preceding cases.

Hylodes lineatus, *Dum. and Bib.*, is very common in Dutch Guiana, and its peculiar habits are well known to the colonists. The first specimen with young which came to my notice had been preserved in alcohol, and was presented to me by Mr. G. O. Wacker, residing at Otembo, on the Para Creek, Surinam, and had been captured at some distance from the water. The young, ten or twelve in number, though separated from the parent, he assured me, when found were attached to the back. In the month of May, 1857, during an excursion to the country inhabited by the Bush negroes, above Sara Creek on the upper Surinam River, I had an opportunity for the first time of seeing these animals carrying their young. The grass and bushes were quite wet from a recent fall of rain, and this seemed the inducement that led them from their hiding places, for when the ground was dry none had been seen. They were very quick in their movements, and when alarmed went at once into the grass and thick bushes. One of my companions, Mr. John Green, and myself succeeded in capturing some specimens, which, as we were just leaving the village, were placed at once in alcohol. In one instance the larvæ were retained permanently adherent to the back of the parent, in consequence of the coagulation of the mucus covering the surface of the body, and are still preserved in the Museum of Comparative Anatomy at Cambridge. The young, from twelve to twenty in number, were collected upon the back of the mother, their heads directed towards the middle line: they were about three-fourths of an inch in length. No limbs were developed, though in some of them the rudiments of a leg existed in the form of a small papilla on either side of the base of the tail. No especial organ was found to aid them in adhering to the back of the parent; the adhesion may have been effected by the mouth. This is rendered probable by the fact that all of them had the mouth in contact either with the skin of the parent or with that of another larva. A viscid mucus covering the integuments undoubtedly assisted in some measure to bring about the same results. However this may be, they retained their places perfectly well, and were not displaced when their mother, closely pursued, carried them through the grass.

On dissection of the young nothing was found materially different to conditions of the larvæ of other Anoura. The external gills had disappeared, but were replaced by internal ones, which were arranged as usual on three hyoid arches. The development of the lungs had commenced, and these were represented by a slender conical mass of cells, but not permeable to air. The mouth was provided with finely denticulated horny jaws, and the intestinal canal was shorter and less spirally convoluted than in ordinary larvæ of frogs and toads. The stomach was not so much developed as to be distinguished from the rest of the intestine; but this last, after passing the liver, was somewhat dilated, and contained, as was shown by the microscope, large quantities of yelk-cells which had not been absorbed, and which were adherent to its walls.

We have here, then, a larva, in all the details of its structure, especially in the existence of gills and of a flattened tail, adapted to aquatic locomotion and respiration, yet passing a portion of its time at least on the back of its parent, and at a distance from the water.

I was not able to ascertain whether the eggs were primarily deposited in the water or not, but it is well known to some of the colonists that after the larvæ have reached a certain degree of development they are carried about in the manner just described, and they do not know them under any other circumstances. The existence of yelk-cells in the intestine shows that for a period at least they may have from these a supply of nutriment; but after this is exhausted—and it appeared to be nearly so in those which I have dissected—how do they obtain their food? In the absence of limbs adapted to terrestrial locomotion can they leave the body of the parent? And if they cannot, do they, as in the case of Pipa, and probably in Notodelphys, depend upon a secretion from her?

Among fishes, as far as at present known, the external conditions under which the eggs are developed are more varied than in any other class of vertebrates. There are scarcely any known conditions of the higher classes to which there are not analogies, at least in the class of fishes. Besides the ordinary mode of depositing eggs upon the bottoms some of the Salmonidæ, like the turtles, bury their eggs; the lampreys (*Petromyzon*), the breams (*Pomotis*), the hassars (*Callicthys*), the sticklebacks (*Gasterosteus*), &c., build more or less complete nests.

Among some of the pipe fishes (*Syngnathidæ*) the eggs, and subsequently the young, are carried in a pouch analagous to that of the opossums and other marsupial animals; and among some of the sharks there is a vitelline placenta analogous to the allantoidan, one of the Mammalia.

To those species enumerated above, where the eggs become more or less intimately connected with the body of the parent after they are laid, may be added the Aspredos, and some species of Bagrus, from Guiana.

Aspredo lævis (*Cuv.* aud *Val.*), the "Trompetti" of the colonists, is about fifteen inches in length, and belongs to a remarkable genus of Siluroid fishes, which, in addition to several peculiarities of anatomical structure, are remarkable for carrying the eggs and young attached to the under surface of the body. These fishes are very abundant in the waters of the Surinam, where they are taken in the nets with other kinds. They are not used as articles of food, except by the negroes, who have a fancy for Siluroids generally, and in consequence these are known among the colonists as Ningré fisi, or "nigger fish." A general account of the internal structure of Aspredo is given in the 'Histoire Naturelle des Poissons,' by Cuvier and Valencienne.

In the month of June the eggs are found adhering to the under side of the body, to the ventral and pectoral fins, and extend as far forward as the under lip, and as far backwards as the middle of the tail. In some, however, the distribution is much more limited. I was unable to learn anything with regard to the transfer of the ova from the genital orifice to the point of their attachment. The only organ which seems in any way adapted to such a purpose is the slender and flexible tail, terminated by a delicate caudal fin. It is possible that the eggs may be deposited on the bottom of the river, and subsequently attached by pressing the under side of the body upon them.

In those individuals where the ova were still in the ovary, but approaching maturity, the integuments of the under side of the body gave no other indications of the changes about to take place than of being quite vascular; the skin was perfectly smooth, no "pores" were visible, but a large vessel was seen emerging from the region of the liver, and, descending along the median line, gave off branches quite freely to the integuments. This may have some relation to the future development of the pedicles which support the eggs, and perhaps to the nutrition of the embryo, as will be adverted to hereafter.

In all the specimens which I have had an opportunity of examining the eggs were either somewhat advanced or quite mature; so that no observations could be made on the earlier conditions of the egg and the formation of its pedicle. The pedicle is a flexible outgrowth from the common integuments, is about two lines in length, is attached to the skin by a slightly expanded base, and spreads out at its summit into a shallow cup or "cupule" for the support of the egg. It is composed almost entirely of fibrous tissue, invested with a layer of tessellated epithelium. In some instances, when the eggs were but little advanced, numerous fusiform cells were detected among the fibres. It is vascular, two or three vessels reaching to the cup, where they ramify and form a somewhat extended capillary plexus.

The eggs vary according to the degree of development, from the 0·09 to 0·15 of an inch in diameter, and are covered with an external homogeneous membrane, containing minute punctiform depressions; within this is a second, of a brownish colour, and composed of epithelium. The embryos which were the most advanced, and just ready to hatch, had not as yet completely absorbed the yolk, and were coiled up within the membranes, which, in consequence of the irregularities of the mass formed by the embryo, had no longer a spherical form.

The eggs are retained in connexion with the cup apparently by adhesion alone, for as soon as the fœtus escapes the egg-membranes become very easily detached from the pedicle, and this last, as shown by some of the specimens, undergoes absorption.

The relation of the embryo to the parent in this singular mode of gestation cannot be determined very accurately, but the vascular plexus in the cup seems to be more than is necessary for the mere nutrition of the part. This increases in size during incubation, those ova in which the development had but slightly advanced measuring from 0·09 to 0·11 of an inch in diameter, while those nearly mature measured from 0·14 to 0·15 of an inch. How this increase of size of the embryo over the original size of the egg is actually obtained I have no facts to show, but either of two suppositions is probable: it may be by absorption of materials from the water which surrounds it, or from the capillary plexus of the pedicles, and in this case in a manner analogous to that of Pipa.

Among the Siluroid fishes of Guiana there are several species which at certain seasons of the year have their mouths and branchial cavities filled either with eggs or young, and, as is believed, for the purpose of incubation. My attention was first called to this singular habit by the late Dr. Francis W. Cragin, formerly U.S. Consul at Paramaribo, Surinam. In a letter dated August, 1854, he says, "The eggs you will receive are from another fish. The different fishermen have repeatedly assured me that these eggs, in their nearly mature state, are carried in the mouth of the parent till the young are relieved by the bursting of the sac. Do you either know or believe this to be so, and, if possible, where are the eggs conceived, and how do they get into the mouth?"

In the month of April, 1857, on visiting the market of Paramaribo, I found that this statement, which at first seemed to be very improbable, was correct as to the existence of eggs in the mouths of several species of fish. In a tray of fish which a negro woman offered for sale I found the mouths of several filled with either eggs or young, and subsequently an abundance of opportunities occurred for repeating the observation. The kinds most commonly known to the colonists, especially to the negroes, are Jara-bakka, Njinge-njinge, Koepira, Makrede, and one or two others, all belonging either to the genus Bagrus or one nearly allied to it. The first two are quite common in the market, and I have seen many specimens of them; for the last two I have the authority of negro fishermen, but have never seen them myself. The eggs in my collection are of three different sizes, indicating so many species; one of the three having been brought to me without the fish from which they were taken.

The eggs become quite large before they leave the ovaries, and are arranged in three zones corresponding to three successive broods, and probably to be discharged in three successive years; the mature eggs of a Jara-bakka eighteen inches long measure three-fourths of an inch in diameter, those of the second zone one-fourth, and those of the third, or very minute, about one-sixteenth of an inch.

A careful examination of eight specimens of Njinge-njinge, about nine inches long, gave the following results.

The eggs in all instances were carried in the mouths of the males. This protection, or gestation of the eggs by the males, corresponds with what has been long noticed with regard to other fishes, as for example Syngnathus, where the marsupial pouch for the eggs or young is found in the males only; and Gasterosteus, where the male constructs the nest, and protects the eggs, during incubation, from the voracity of the females.

In some individuals the eggs had been recently laid, in others they were hatched, and the fœtus had grown at the expense of some other food than that derived from the yelk, as this last was not proportionally diminished in size, and the fœtus weighed more than the undeveloped egg. The number of eggs contained in the mouth was between twenty and thirty. The mouth and branchial cavities were very much distended, rounding out and distorting the whole hyoid and branchiostegal region. Some of the eggs even partially protruded from the month. The ova were not bruised or torn as if they had been bitten, or forcibly held by the teeth. In many instances the fœtuses were still alive, though the parent had been dead for many hours.

No young or eggs were found in the stomach, although the mouth was crammed to its fullest capacity.

The above observations apply to Njinge-njinge. With regard to Jara-bakka, I had but few opportunities for dissection, but in several instances the same conditions of the eggs were noticed as above; and in one instance, besides some nearly mature fœtuses contained in the mouth, two or three were squeezed apparently from the stomach, but not bearing any marks of violence or of the action of the gastric fluid. It is probable that these found their way into that last cavity after death, in consequence of the relaxation of the sphincter which separates the cavities of the mouth and stomach. These facts lead to a conclusion that this is a mouth-gestation, as the eggs are found there in all stages of development, and even for some time after they are hatched.

The question will be very naturally asked, how, under such circumstances, these fishes are able to secure and swallow their food. I have made no observations bearing upon such a question. Unless the food consists of very minute particles, it would seem necessary that, during the time of feeding, the eggs should be disgorged. If this supposition be correct, it would give a very probable explanation of the only fact which might be considered at variance with the conclusion stated above, viz., that we have in these fishes a mouth-gestation. In the mass of eggs with which the mouth is filled I have occasionally found the eggs, rarely more than one or two, of another species. The only way in which their presence may be accounted for, it seems to me, is by the supposition that while feeding, the eggs are disgorged; and as these fishes are gregarious in their habits, when the ova are recovered the stray egg of another species may be introduced into the mouth among those which naturally belong there.*

Musical Fishes of the East.

THE existence of musical fishes is as firmly believed by residents in various parts of our eastern empire as that of sea serpents by those whose home is on the waters of the great deep. I desire to encourage both beliefs, and demand that respectful credence shall be given to respectable witnesses. At the same time I thoroughly commend, and indeed enjoin, that caution which carefully sifts evidence, and admits no more than is clearly demonstrated. Dr. Buist has lately collected some very interesting paragraphs on the subject of the musical fishes of the East, and published them in No. 1711 of the 'Athenæum,' dated August 11, 1860. These I reprint below.

The first is from Sir Emerson Tennent's 'Ceylon,' and the phenomenon described was heard at Chilka Lake, a salt water creek close to Batticaloa, on the eastern shores of Ceylon. It is as follows:—

After speaking of these musical fishes Sir Emerson Tennent says, "I distinctly heard the sounds in question. They came up from the water like the gentle thrills of a musical chord, or the faint vibrations of a wine glass when its rim is rubbed by a wet finger. It was not one sustained note, but a multitude of tiny sounds, each clear and distinct in itself; the sweetest treble mingling with the lowest bass. On applying the ear to the wood-work of the boat, the vibration was greatly increased in volume by conduction. The sounds varied considerably at different points, as we moved across the lake, as if the number of the animals from which they proceeded was greatest in particular spots; and occasionally we rowed out of hearing of them altogether, until, on returning to the original locality, the sounds were at once renewed."

---

* Extracted from the 'Canadian Naturalist and Geologist,' Vol. v. No. 3.

The next extract is particularly interesting as relating to a different locality, and as having been published as far back as January, 1847 in the 'Bombay Times.' The place mentioned is a salt-water creek near Bombay. There is no collusion whatever between the two writers. It is extremely improbable that Sir Emerson should have seen this account, and have omitted all allusion to it; and it is quite impossible that Dr. Buist should have been cognizant of Sir Emerson Tennent's subsequently published observations. Here is Dr. Buist's own narrative:—

"A party lately crossing from the promontory in Salsette called the 'Neat's tongue,' to near Sewree, were, about sunset, struck by hearing long distinct sounds like the protracted booming of a distant bell, the dying cadence of an Æolian harp, the note of a pitch-pipe or pitch-fork, or any other long-drawn-out musical note. It was, at first, supposed to be music from Parell floating at intervals on the breeze; then it was perceived to come from all directions, almost in equal strength, and to arise from the surface of the water all around the vessel. The boatmen at once intimated that the sounds were produced by fish, abounding in the muddy creeks and shoals around Bombay and Salsette; they were perfectly well known, and very often heard. Accordingly, on inclining the ear towards the surface of the water; or, better still, by placing it close to the planks of the vessel, the notes appeared loud and distinct, and followed each other in constant succession. The boatmen next day produced specimens of the fish — a creature closely resembling in size and shape the fresh-water perch of the north of Europe—and spoke of them as plentiful and perfectly well known. It is hoped they may be procured alive, and the means afforded of determining how the musical sounds are produced and emitted, with other particulars of interest supposed new in Ichthyology. We shall be thankful to receive from our readers any information they can give us in regard to a phenomenon which does not appear to have been heretofore noticed, and which cannot fail to attract the attention of the naturalist. Of the perfect accuracy with which the singular facts above related have been given no doubt will be entertained when it is mentioned that the writer was one of a party of five intelligent persons, by all of whom they were most carefully observed, and the impressions of all of whom in regard to them were uniform. It is supposed that the fish are confined to particular localities — shallows, estuaries and muddy creeks, rarely visited by Europeans; and that this is the reason why hitherto no mention, so far as we know, has been made of the peculiarity in any work on Natural History."

I should observe that these observations date but one year previously to those of Sir Emerson Tennent's, who was at Chilka late in 1848, eleven years before the publication of his work on Ceylon. But we have other independent witnesses. In 1858 the present Governor of Ceylon visited Chilka Lake, and this, be it observed, is a year prior to the publication of the fact by Sir Emerson Tennent. This gentleman says,

"I ought not to take my leave of Batticaloa, which I may not have an opportunity of revisiting, without mentioning the natural phenomenon for which its lake is remarkable—the singing fish. I was too ill during my stay in 1857 to expose myself in the night air upon the water; and I confess that, in spite of the impression then made upon my fellow travellers, amongst whom were Major-General Lockyer and Captain Gosset, I went out upon the present occasion with a considerable amount of incredulity, and was the last to believe the evidence of my own senses, Dr. Johnston being satisfied as to the existence of a sound apparently proceeding from the water long before I could realize it; but after changing the position of the boat once or twice, there could be no doubt about the matter. The sound rose and swelled, and absolutely vibrated about us in a manner that left no question as to the fact, whatever may be the causes. Its character is indescribable. It is not like any other sound. It is only heard at night. It has nothing harmonious or musical about it. There are no modulations, no variety of notes, except what the increase and decrease in strength produced. As to its origin, nobody knows anything. It may be the fish to whom it is popularly attributed; it may be the rush of air through rocks partially hollowed. There is nothing but conjecture to guide us in this respect. The results all can vouch for. And these results are certainly most distinct within a limited distance from the shore, though heard occasionally in deep water. I am no naturalist; I can only state what I personally saw and experienced. Others must explain it. Something similar, it is said, occurs in the Bay of Naples. It is strange that between Naples and Batticaloa there should be this one point of resemblance."

Next follows an extract from a letter published in the 'Bombay

Times' a few weeks subsequently to the publication of his first notice in the same journal.

"*Musical Fish.*—Sir,—In a late number of the 'Times' I noticed some remarks respecting the musical fish as they have been rather aptly termed; and it may be interesting to the readers of the 'Times' to be informed that the existence of a similar phenomenon has long been known to the residents at Vizagapatam. I have heard the musical sounds, like prolonged notes on a harp, when rowing at the back water at that station; and they were generally supposed to proceed from the fish coming in contact with the sides of the boat. To the best of my recollection the sounds were never heard at a distance from it." Vizagapatam is on the Coromandel coast, 498 miles from Madras, the shores abounding in shallow creeks like those of Ceylon.

The last extract is from the 'Journal of the Samarang,' and written by Dr. Adams, surgeon and naturalist to the expedition.

"While on board the brig 'Ariel,' then lying off the mouth of the river of Borneo, I had the good fortune to hear that solemn aquatic concert of the far-famed organ fish or drum — a species of Pogonias. These singular fishes produce a loud monotonous singing sound, which rises and falls and sometimes dies away, or assumes a very low drumming character; and the noise appeared to proceed mysteriously from the bottom of the vessel. This strange submarine chorus of fishes continued to amuse us for about a quarter of an hour, when the music, if so it may be called, suddenly ceased, probably on the dispersion of the band of performers."

These various narratives, too diversified to be repetitions of each other, too similar to be mere inventions independent of each other, contain intrinsic evidence of truthfulness, quite irrespective of that credence to which the position of the several writers so eminently entitles them. I entertain no shadow of doubt that the phenomenon has been faithfully recorded in the true spirit which Natural History requires and generates. Nevertheless, the mind is naturally slow at receiving facts opposed to the ordinary evidence of our senses. The belief that fishes are dumb has become of universal acceptance; but waiving this accepted creed, what is the character of that sound? If vocal, where are the organs of voice situated? If not vocal, by what other process are these musical sounds produced? I shall be extremely obliged for communications on this most interesting subject.

EDWARD NEWMAN.

NOTICES OF NEW BOOKS.

'*The Ibis: a Magazine of General Ornithology.*' Edited by PHILIP LUTLEY SCLATER, M.A., F.L.S., &c. Nos. 5, 6 and 7; respectively 104 pp., 98 pp., and 108 pp.; and two or three coloured litho. plates. London: Trübner. January, April and July, 1860. Price 6*s*. each.

The general character of this Journal is fully explained in a former number of the 'Zoologist' (Zool. 6946). I have now only to give a summary of the contents of the three numbers:—

Contents of No. 5.

Notes on Birds observed in the Ionian Islands, and the Provinces of Albania proper, Epirus, Acarnania and Montenegro. By the Hon. Thomas L. Powys, F.Z.S.

On Birds collected or observed in the Republic of Honduras, with a short account of a journey across that country from the Pacific to the Atlantic Ocean. By George Cavendish Taylor, F.R.G.S. Part I.

On the Eggs of two Raptorial Birds from the Falkland Islands. By Philip Lutley Sclater.

Note on Wallace's Standard-wing (*Semioptera Wallacei*). By Philip Lutley Sclater.

Contributions to the Ornithology of Guatemala. By Osbert Salvin and Philip Lutley Sclater.

The Ornithology of Amoy (China). By Robert Swinhoe, of H.M. Consular Service.

On the Ornithology of Northern Africa. By the Rev. H. B. Tristram, M.A., F.L.S. Part III. The Sahara (continued).

Note on the Migratory Habits of the Song Thrush (*Turdus musicus*). By Alfred Newton, M.A., F.L.S.

Contents of No. 6.

On the addition to the British Fauna of Pallas's Three-toed Sandgrouse (*Syrrhaptes paradoxus*). By Thomas John Moore, Keeper of the Free Public and Derby Museum, Liverpool.

On Birds collected or observed in the Republic of Honduras, with a short account of a journey across that country from the Pacific to the Atlantic Ocean. By George Cavendish Taylor, F.R.G.S. Part II.

On the Nidification of certain Birds in North-eastern Africa. By Baron Richard König von Warthausen.

Additions and Corrections to the 'Ornithology of Amoy.' By Robert Swinhoe, of H.M. Consular Service.

Notes on Birds observed in the Ionian Islands, and the Provinces of Albania proper, Epirus, Acarnania and Montenegro. Part II. By the Hon. Thomas L. Powys, F.Z.S.

The Ornithology of Northern Celebes. By Alfred Russell Wallace.

On an undescribed Species of Hawk from New Granada. By Philip Lutley Sclater.

On the Ornithology of Northern Africa. By the Rev. H. B. Tristram, M.A., F.L.S., C.M.Z.S. Part IV. Lake Halloula.

Ornithological Notes of the Voyage of the 'Fox' in the Arctic Seas. By David Walker, M.D., late Naturalist on board the 'Fox.'

On the Eggs of the Nutcracker and Parrot Crossbill. By the Rev. H. B. Tristram, M.A., F.L.S.

Note on the Eggs of the Eared Vulture and the Wedgetailed Eagle. By J. H. Gurney, M.P., F.Z.S.

Memoir of the late John Wolley.

Contents of No. 7.

On Birds collected in the Colony of Natal, in South-eastern Africa. By John Henry Gurney, M.P., F.Z.S.

On Birds collected or observed in the Republic of Honduras, with a short account of a journey across that country from the Pacific to the Atlantic Ocean. By G. Cavendish Taylor, F.R.G.S. Part III.

Notes on Birds observed in the Ionian Islands, and the Provinces of Albania proper, Epirus, Acarnania and Montenegro. By the Hon. Thomas L. Powys, F.Z.S. Part III.

On the Habits of the Swallowtailed Kite (*Elanoïdes furcatus*). By Robert Owen, C.M.Z.S.

On Birds collected in the Somáli country, Eastern Africa. By Captain J. H. Speke, F.R.G.S.

History of the Derbyan Mountain Pheasant (*Oreophasis Derbianus*). By Osbert Salvin, M.A., F.Z.S.

Recollections of the Swans and Geese of Hudson's Bay. By George Barnston.

Notes on the Humming Birds of Guatemala. By Osbert Salvin, M.A., F.Z.S.

Contributions to the Ornithology of Guatemala. By Osbert Salvin and Philip Lutley Sclater. Part II.

Note on the Egg and Nestling of the Californian Vulture. By Philip Lutley Sclater.

Ornithological Notes from Mesolonghi and Southern Ætolia. By W. K. Simpson, M.A., F.Z.S.

Each number also contains notices of recent ornithological works, and extracts from correspondence. The character of the work is fully maintained in these three quarterly parts.

15 SE 60

CONTENTS.

INSECTS. — Habits of Macroglossa Stellatarum, *Rev. Joseph Greene, M.A.*, 7153. Abundant occurrence of Sesia Muscæformis? near Torquay, *Edward Newman*, 7153. Food-plant of the Larva of Eupithecia rufifasciata, *Rev. J. Greene, M.A.*, 7153. Dicranura bicuspis, *T. Meldrum*, 7153. Capture of Acronycta Alni at Sugar, *Charles Roberts*, 7154. Larvæ of Caradrina cubicularis, *Rev. J. Greene, M.A.*, 7154. Description of the Larva of Tæniocampa Populeti, *Rev. H. Harpur Crewe, M.A.*, 7154. Occurrence of Agrotera nemoralis in Sussex, *John Porter, jun.*, 7154. Exæretia Allisella bred, *James Cooper, Esq.*, 7154. Larva of Diplodoma marginepunctella carnivorous; Larva of Talæporia pseudo-bombycella carnivorous, *Charles Healy*, 7155. Coleophora vibicella, *J. E. Fletcher, Esq.*, 7155. Observations on Coleophora melilotella, *John Scott, Esq.*, 7155. Larva of Asthena coniferana, *John Sang*, 7155. Carpocapsa Reaumurana, *Carl von Heyden*, 7155. Ephestia pinguedinella, *Rev. B. H. Birks*, 7156. Hymenoptera in repose, *S. Stone, Esq.*, 7156. Hymenoptera in repose, *Frederick Smith, Esq.*, 7156. Scarcity of Hymenoptera in 1860, *Colonel H. W. Newman*, 7156. Calosoma Sycophanta in the Isle of Wight, *A. G. More, Esq., F.L.S.*, 7157. Rhynchites Betuleti, *E. C. Rye, Esq.*, 7157. Hints to Bug Collectors, *S. Stone, Esq.*, 7157. On the Transformation of Lymnophlæus marmoratus, *Edward Parfitt, Esq.*, 7158. Expansion of the Wings in Lepidoptera on emerging from the Chrysalis, *Henry Deane, Esq.*, 7159.

PROCEEDINGS OF SOCIETIES.—Entomological Society, 7160.

BOTANIST'S CORNER.—On the Natural Affinities of Lastrea Thelypteris, *George Maw, Esq., F.L.S.*, 7165. Discovery of Lathyrus tuberosus at Fyfield, Ongar, Essex, *Thomas Corder, Esq., F.L.S.*, 7165.

CETACEA.—The Dugong: the valuable Medicinal Properties of its Oil in Consumption and various Diseases, *John M'Grigor Croft, Esq., M.D., &c.*, 7166.

QUADRUPEDS.—A Mole taking to the Water, *Edward Parfitt, Esq.*, 7169.

BIRDS.—Indigenous and Occasional Visitors to the Avi-Fauna of Europe, *C. R. Bree, Esq., M.D.*, 7170. Kestrel feeding Chickens, *Joshua Brown, Esq.*, 7170. Robins and Titmice reared in one Nest, *L. Appleby, Esq.*, 7171. The Hawfinch breeding in Norfolk, *H. Stevenson, Esq.*, 7171. Snipes in Summer, *Edward Parfitt, Esq.*, 7172. Great Flock of Scoters in July, *E. C. Buxton, Esq.*, 7172.

REPTILES.—Abundance of the Common Lizard in Ireland, *Rev. F. Bewley*, 7172.

Unusual Modes of Gestation in Batrachians and Fishes, 7173.

FISHES.—Musical Fishes of the East, 7179.

NOTICES OF BOOKS.—'The Ibis: a Magazine of General Ornithology,' 7183.

In the Press, and will be ready on the 15th of September.

SUGGESTIONS FOR FORMING COLLECTIONS OF BIRDS' EGGS. By ALFRED NEWTON, M.A., F.L.S. *Price Sixpence, by post Sevenpence.*

London: E. NEWMAN, 9, Devonshire Street, Bishopsgate, N.E.

In the Press, and will be ready on the 15th of September.

A LIST of BRITISH EUPLEXOPTERA, ORTHOPTERA, THYSANOPTERA, HOMOPTERA and HEMIPTERA. By FRANCIS WALKER, F.L.S. *Price Sixpence, by post Sevenpence.*

London: E. NEWMAN, 9, Devonshire Street, Bishopsgate.

To Entomologists.

FOR SALE.—A CABINET, veneered with walnut, containing fourteen drawers (16 by 14), corked, papered, framed and glazed, and enclosed by doors. Price, Five Guineas. Also a number of smaller Cabinets (some second hand) for Eggs, Insects and Minerals very cheap. Store and Collecting Boxes. At R. DAVY'S, 83, Newman Street, Oxford Street.

Goods sent to all parts of the country.

E. NEWMAN, PRINTER, DEVONSHIRE STREET, BISHOPSGATE, N.E.